

REMARKS/ARGUMENTS

Favorable reconsideration of this application in light of the following discussion is respectfully requested.

Claims 9, 10, 12, 14-15, 31-32 and 38 are presently active in this case, no amendments are made herein.

In the outstanding Office Action, Claims 9, 10 and 15 were rejected under 35 U.S.C. §103a as being unpatentable over U.S. Patent Publication 2005/015,0866 to O'Donnell et al. in view of U.S. Patent No. 6,771,483 to Harada et al.; Claim 12 was rejected under 35 U.S.C. § 103a as being unpatentable over O'Donnell and Harada et al., and further in view of U.S. Patent No. 4,357,387 to George et al.; Claim 31 and 38 were rejected under 35 U.S.C. § 103a as being unpatentable over O'Donnell, and Harada et al., and further in view of U.S. Patent No. 4,310,390 to Bradley et al. and U.S. Patent No. 6,120,955 to Tokutake et al.; Claim 14 was rejected under 35 U.S.C. § 103a as being unpatentable over O'Donnell, Harada, Bradley et al. and Tokutake et al., and further in view of U.S. Patent No. 5,534,356 to Mahulikar et al.; Claim 32 was rejected under 35 U.S.C. § 103a as being unpatentable over O'Donnell et al., Harada et al., and further in view of U.S. Patent No. 5,892,278 to Horita et al.; and Claims 9, 10 and 12 were provisionally rejected on the ground of non-statutory obviousness-type double patenting as being unpatentable over Claims 5, 17-20 of U.S. Patent Application 10/773,245 in view of O'Donnell et al.

Turning now to the merits, the present invention, as defined in claim 9, is directed to an internal member of a plasma processing vessel including a film on a base material. The base material is a target to be protected and the film is formed above the base material to thereby protect the base material. The film is a multilayer film formed by thermal spraying of ceramic. The film includes a main layer and a barrier coat layer. The barrier coat layer is located between the main layer and the base material (i.e., the base material, barrier coat layer and main layer are

stacked sequentially in that order). In an effort to prevent a processing gas and a cleaning fluid from permeating into a space between the base material and the main layer, the film layer is sealed by a resin. Specifically, the barrier coat layer which is not exposed to outside is sealed by a resin. Therefore, even if the outside layer (the main layer) covering the barrier coat layer is ruptured, the inside layer (the barrier coat layer) can remain unruptured and the barrier function can be maintained. Applicants' Claim 9 is intended to cover these features.

Specifically, Claim 9 recites an internal member of a plasma processing vessel, the internal member including a base material and a film formed on a surface of the base material. The film includes a main layer formed by thermal spraying of ceramic and a barrier coat layer formed of ceramic including an element selected from the group consisting of B, Mg, Al, Si, Ca, Cr, Y, Zr, Ta, Ce and Nd. Also recited is that the barrier coat layer is an intermediate layer formed between the main layer and the base material, and that the barrier coat layer is a thermally sprayed film and at least parts of pores inside the thermally sprayed film are sealed by a resin.

The Office Action asserts that Claim 9 is unpatentable over O'Donnell (US PG PUB No. 2005/015,0866) in view of Harada (US Patent No. 6,771,483). Specifically, the Office Action asserts "O'Donnell et al teach sealing of anodized surfaces but do not teach at least parts of pores inside the thermally sprayed film are sealed by a resin." Thus, the Office Action admits that O'Donnell does not teach the sealing feature. However, the Office Action asserts "Harada et al. further teach that each of the main and barrier coat layers are sealed using a resin (column 3, line 19 to column 6, line 10)." The Office Action asserts that it would have been obvious to one of ordinary skill in the art at the time of the invention to seal the thermally sprayed barrier coat layer with a resin as taught by Harada et al in the apparatus of O'Donnell to fill the fine pores in the thermally sprayed layer and to prevent ingress of corrosive gas from the plasma. Applicants respectfully traverse this rejection.

Harada discloses an electrostatic chuck member including a substrate 1, an undercoat 2 of a metallic layer formed on at least one surface thereof, a lower insulating layer 3 of Al<sub>2</sub>O<sub>3</sub> ceramic formed on the undercoat 2, a metallic electrode layer 4 formed on the lower insulating

layer 3 and an upper insulating layer 5 of  $\text{Al}_2\text{O}_3$  ceramic formed on the electrode layer 4 as a topcoat (See Fig. 1 of Harada). The metallic sprayed electrode layer 4 is sandwiched between the sprayed insulating layers 3 and 5 of  $\text{Al}_2\text{O}_3$  ceramic. As a result, performance can be maintained over a long period of time without being substantially affected by corrosive gas in the environment or plasma under most use environments (See col. 4, lines 33 to 38). In other words, the metallic sprayed electrode layer 4 is a target to be protected by the lower and the upper insulating layer 3 and 5 respectively.

By contrast, in the present invention, a target to be protected is the base material. A multilayer formed by thermal spraying of ceramic, which includes the barrier coat layer and the main layer, is formed above the base material. That is, the base material has at least two protecting layers thereon to protect itself from the outer environment. As noted above, a target to be protected in Harada et al. is the metallic electrode layer 4. The metallic sprayed electrode layer 4 is sandwiched between the sprayed insulating layers 3, 5 of  $\text{Al}_2\text{O}_3$  ceramic, to thereby maintain performances over a long time without being substantially affected by corrosive gas in the environment or plasma. That is, the metallic sprayed electrode layer 4 has only one protecting layer (for example, the upper insulating layer 5) thereon to protect itself. Since Harada fails to disclose a multilayer film formed on a target to be protected, it follows that Harada is also totally silent in that a barrier coat layer, which is a lower protecting layer between two protecting layers formed on a base material, is sealed by resin.

Furthermore, in O'Donnell, the yttria containing coating (corresponding to the main layer of the present invention) and the intermediate coating (corresponding to the barrier coat layer of the present invention) are used as a protecting layer to protect the substrate (corresponding to the base material of the present invention). In contrast, the lower insulating layer and the upper insulating layer of Harada are used as a dielectric layer of the electrostatic chuck. That is, the objects of the yttria containing coating (main layer) and the intermediate layer (barrier coat layer) of the O'Donnell are totally different from those of the lower and the upper insulating layers of Harada. Accordingly, it would not have been obvious to one of

ordinary skill in the art at the time of the invention to combine the upper and the lower insulating layers of Harada with the apparatus of O'Donnell.

Finally, Applicants note that the secondary references to George et al., Bradley et al., Tokutake et al., Mahulikar et al. and Horita et al. are cited for teachings in dependent claims and do not correct the deficiencies of the primary references distinguished above.

For the reasons discussed above, Claim 9 patentably defines over the cited reference. As Claims 10, 12, 14, 15, 31, 32 and 38, directly or indirectly depend from claim 9, these claims patentably define over the cited references for the same reasons indicated with respect to Claim 9, and further because of the additional features recited therein which, when taken alone and/or in combination with the features recited in Claim 9, remove the invention defined therein further from the disclosures made in the cited references. In this regard, Applicants note that dependent Claims 14, 31 and 38 are rejected in the Office Action as being unpatentable over the combination of O'Donnell et al., Harada et al., Bradley et al., Tokutake et al. and Mahulikar et al. While the number of references used in a rejection is not strictly limited, Applicants submit that the fact itself that six references are required for meeting the claim limitations strongly suggests the non-obviousness of these dependant claims.

With respect to the provisional rejection of Claims 9, 10 and 12 for obviousness double patenting over Claims 5, 17-20 of co-pending Application No. 10/773,245 (US PG PUB No. 2005/0103275), Applicants wish to address this rejection at such time as one of the co-pending applications issues as a patent.

Consequently, in view of the present amendment, no further issues are believed to be outstanding in the present application and the present application is believed to be in condition for formal allowance. An early and favorable action is therefore respectfully requested.

Respectfully submitted,

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